



“Summary of article by Shoshana Zuboff: The Limits of Hierarchy in an Informed Organization *and* The Information Panopticon” in Frontier Issues in Economic Thought, Volume 4: The Changing Nature of Work. Island Press: Washington DC, 1998. pp. 143-146

Social Science Library: Frontier Thinking in Sustainable Development and Human Well-being

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An informed workplace is one where automation is not only a source of technological advance but also of new information about the technique, efficiency and quality of the work process itself. This information can alter the balance of power in the workplace in complex ways. Workers may gain an increased share of responsibility and authority, but if the information potential is left untapped, or captured exclusively by management, the alienation of the worker may intensify.

THE LIMITS OF HIERARCHY

“A technology that informates can have a corrosive effect on the hierarchical organization of work, but its transformative power finally depends upon a series of crucial managerial choices.”[285] Case studies conducted at several establishments in a variety of industries show that when automation is introduced, workers and managers are often confused about their roles and responsibilities. Since information embedded in automated systems can be key to a firm’s competitiveness, people at all levels need to analyze and respond to relevant data. Yet, even with this understanding, managers often fear that information “could be misused or misinterpreted ... that such data can only be managed by certain people with certain accountabilities and ... certain skills or capabilities.”[289] Furthermore, information leads to questioning, a process inimical to the obedience-based structure of the hierarchical firm. Since it is more difficult to determine if a worker is thinking to his or her best ability than it is to monitor a specific task, a worker must be motivated - not just told - to learn, to solve problems, to think critically. Interpreting data does not appear to be work in the way that manual labor does, so managers sometimes see the new work style as laziness. Workers resent this and often feel pressured to master new technology while still expending the physical energy associated with non-managerial work.

Workers who once relied on hands-on knowledge gained during years of experience are now distanced from the production process and dependent on computerized machines for information. After gaining experience with automation, some managers come to question the use of technology to override or displace the skill and judgement of the workforce because they see a need for problem-solving and troubleshooting on the ground. To be fully effective, the new technologies require both in-depth knowledge of the production process and technical mastery of computer systems. After their initial resistance, many workers come to a similar conclusion: they could learn to use information technologies as tools to express their own knowledge.

These conflicts played out in different ways in different firms. At one older plant, lines of authority were sharply drawn and the technological transition reinforced mutual suspicion. Workers felt they were taking on additional responsibility without additional compensation or contractual protection. In another plant supervisors appreciated the need to tap the thinking skills of operators but provoked considerable anxiety by subjecting hourly workers to an elaborate qualifications review. Managers eventually realized that workers' commitment to the firm increased when "they had a real share in the business, an opportunity to learn and the freedom to inquire without confronting arbitrary barriers of managerial authority." [295]

In an earlier industrial period, scientific management (also called Taylorism) analyzed workers' know-how and transferred it into management functions. If automating a workplace is the only objective, computerization replicates this process by translating workers' knowledge into management-controlled algorithms. An informing strategy, on the other hand, would value learning and could undermine the logic of Taylorism. Knowledge returns to the worker, but in an externalized form. Under a compatible management structure, this knowledge can be widely shared, grappled with intellectually, and transformed into insight that can further expand the information content of the system.

Without a conscious strategy to redistribute authority, neither the productive potential of information technology, nor that of employees will be realized. Several studies confirm that technological change must be coupled with changes in organization, attitudes, and culture to make a substantial contribution to a firm's competitiveness. The introduction of new technology is not sufficient by itself to achieve strategic change; however, it can put knowledge and authority on a collision course. As workers increasingly interpret and respond to data, the boundaries between management knowledge and operations techniques blur; the system of management domination becomes increasingly fragile.

THE INFORMATION PANOPTICON

During the 18th century philosopher Jeremy Bentham designed a Panopticon, a structure (meant to be a prison, but first built as a factory) in which a central observer could watch the activities of every other individual within the structure without being observed in turn. Since an inmate (or worker) can not know at any one time if he or she is being observed, he or she will remain in a state, described by the twentieth century philosopher Michael Foucault, of "conscious and permanent visibility that assures the automatic functioning of power. So...that the surveillance is permanent in its effects, even if it is discontinuous in its action." [321]

"Information systems that translate, record, and display human behavior can provide the computer age version of universal transparency." [322] Supervision often requires considerable psychological effort and difficult face-to-face engagement to get others to do what the company wants. The transparency of information systems offers supervisors a less stressful alternative, reduces uncertainty, and induces conformity to management expectations.

The capacity to track performance was not generally understood until new systems were in place, but once managers became aware of it they were likely to use it to enhance control. Some

wanted to coach those who made mistakes. Others saw it as an opportunity to eliminate dependence on worker-provided logs and reports. No longer could workers who made mistakes fudge the numbers to protect themselves. Decisions about termination, promotion, and discipline, which often requiring extensive documentation, could be made more quickly with records from instruments that were almost continuously monitored.

However, if computer monitoring substitutes for supervision, reciprocity between managers and workers deteriorates. As one manager put it, “[t]he system can’t give you the heartbeat of the plant; it puts you out of touch” [326] with why mistakes were made or opportunities were missed. Small problems are less likely to be smoothed over with small favors. Even for managers confident of their interpersonal skills, the reduction of uncertainty and psychological stress proved a powerful incentive to transform management assumptions, practices, and behavior.

Ultimately, unlike Bentham’s Panopticon, the organizations in this study are hierarchical. Managers who are eager for information about subordinates resist technology that could relay information about their own performance up through the chain of command. They equate control over information with control over their own work and the exercise of discretion, while upper level executives want integrated, real-time data about the entire organization.

ADAPTING TO VISIBILITY AND SHARED INFORMATION

Some workers felt that computerized systems produced an objective performance measure to offset subjective management evaluations and office politics. However, visibility also evoked a sense of vulnerability and powerlessness, so both workers and managers took steps to reduce the risk of unwanted exposure. Managers tried to control the flow of information upward, while many workers changed behavior to conform with company expectations.

When employee participation at all levels is valued, or interdependence between departments is high, a sense of collective responsibility may develop which tempers the oppressiveness of surveillance. Information becomes a communal resource for making decisions and resolving disputes; arbitrary management power diminishes in the face of objective data. Under more adversarial regimes, workers may try to beat the system, but the transparency of information technology makes the system harder to bypass, raising their frustration.

If collective responsibility is to become the norm, collaborative relationships and egalitarian access to data must be nurtured. Intellectual and communication skills must be enhanced throughout the organization to enable shared understanding of complex information systems. Just as workers are no longer confined to single task-oriented job, managers can no longer command in isolation from their peers, superiors, and subordinates.